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202206UECM3463OE3a

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Started on	Wednesday, 10 August 2022, 05:04 PM
Completed on	Wednesday, 10 August 2022, 05:04 PM
Time taken	7 secs
Grade	**0** out of a maximum of 10 (**0**%)

1
Marks: 1

The number of claims in a period has a Binomial distribution with parameters m = 7 and q = 0.51. The amount of each claim X follows P(X = x) = 0.25, x =1, 2, 3, 4. The number of claims and claim amounts are independent. S is the aggregate claim amount in the period. Calculate $F_S(4)$. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.149134
Marks for this submission: 0/1.

2
Marks: 1

The number of claims in a period has a geometric distribution with mean 4.20. The amount of each claim is distributed as follows

Claim Amounts, X	0	1	2	3	4
Probability		0.45	0.24	0.17	0.07	0.07

The number of claims and claim amounts are independent. S is the aggregate claim amount in the period. Calculate $F_S(3)$. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.562364
Marks for this submission: 0/1.

3
Marks: 1

- Customers arrive in a store at a Poisson rate of 0.47 per minute.
- The amount of profit the store makes on each customer is randomly distributed as follows:

Profit	0	1	2	3
Probability	0.65	0.17	0.13	0.05

Determine the probability of making 3 profit in 10 minutes. _____

Answer: ✗

Make comment or override grade

Incorrect
Correct answer: 0.155993
Marks for this submission: 0/1.

4 📝

Marks: 1

Claim counts and sizes on an insurance coverage are independent and have the following distribution:

Number of claims	Probability
0	0.75
1	0.12
2	0.13

Claim Size

	Probability
200	0.55
400	0.24
600	0.12
900	0.09

Let S be the aggregate claims. Calculate $F_S(600)$. _____

Answer: [   ] ✗

Incorrect

Correct answer: 0.932845

Marks for this submission: 0/1.

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5 📝

Marks: 1

The number of claims on an insurance coverage follows a zero modified Poisson distribution with mean $\lambda = 5$ and $p_0^M = 0.41$. The size of each claim has the following distribution:

Claim Size, x	0	3	6	9
Probability, P(X = x)	0.55	0.2	0.11	0.14

Calculate the probability of aggregate claims of 9 or more. _____

Answer: [   ] ✗

Incorrect

Correct answer: 0.403

Marks for this submission: 0/1.

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6 📝

Marks: 1

The number of snowstorms in January has a binomial distribution with m = 5, q = 0.5. The distribution of the number of inches of snow is

Inches	1	2	3	4	5	6
Probability	0.18	0.27	0.21	0.09	0.09	0.16

The number of snowstorms and the number of inches of snow are independent. Determine the expected amount of snow in January given that at least 4 inches of snow fall. _____

Answer: [   ] ✗

Incorrect

Correct answer: 9.0749

Marks for this submission: 0/1.

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7 📝

Marks: 1

For an insurance coverage, you are given:

- Claim frequency (N^M), before application of deductibles, follows a zero modified geometric distribution with parameters $\beta = 5$ and $P(N^M = 0) = 0.62$.
- Claim size (X^M), before application of deductibles, follows a zero modified Poisson distribution with parameters $\lambda = 4$ and $P(X^M = 0) = 0.55$.
- Claim frequency and claim size are independent.
- There is a deductible of 3 per loss.

Calculate the probability number of payments being greater than 6 times 1000, i.e. calculate $1000P(N^P > 6)$. _____

Answer: [   ] ✗

Incorrect

Correct answer: 8.37427

Marks for this submission: 0/1.

8 📝

Marks: 1

For insurance coverage, you are given:

- The number of claims for each insured follows a Binomial distribution with parameters m = 8 and q.
- q varies by insured according to beta distribution with parameters a = 17 and b = 4
- Claim size, before application to claims limits, follows a gamma distribution with parameters a = 4, θ = 800.
- Coverage is subject to claim limit of 1,990.
- Number of claims and claim sizes are independent.

Calculate the probability that aggregate losses will be greater than 2,404, using the normal approximation. _____

Answer: [   ] ✗

Make comment or override grade

Incorrect
Correct answer: 0.999943
Marks for this submission: 0/1.

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9 📝

Marks: 1

You are given:

- The number of claims for each insured follows a Poisson distribution with mean 3.
- Claim size, follows a Gamma distribution with parameters a = 6, θ = 850.
- Number of claims and claim sizes are independent.

Derive the formula for the skewness of the aggregate losses and then calculate the skewness. _____

Answer: [   ] ✗

Make comment or override grade

Incorrect
Correct answer: 0.712697
Marks for this submission: 0/1.

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10 📝

Marks: 1

Losses follow a compound distribution with both frequency and severity having discrete distribution.
For frequency

$$P_N(z) = 0.47 + 0.53[e^{2.00z}-1]/[e^{2.00}-1]$$

For Severity

$$P_X(z) = 0.35 + 0.33z + 0.25z^2 + 0.04z^3 + 0.03z^4$$

Calculate the Variance of the aggregate losses. _____

Answer: [   ] ✗

Make comment or override grade

Incorrect
Correct answer: 3.7468
Marks for this submission: 0/1.